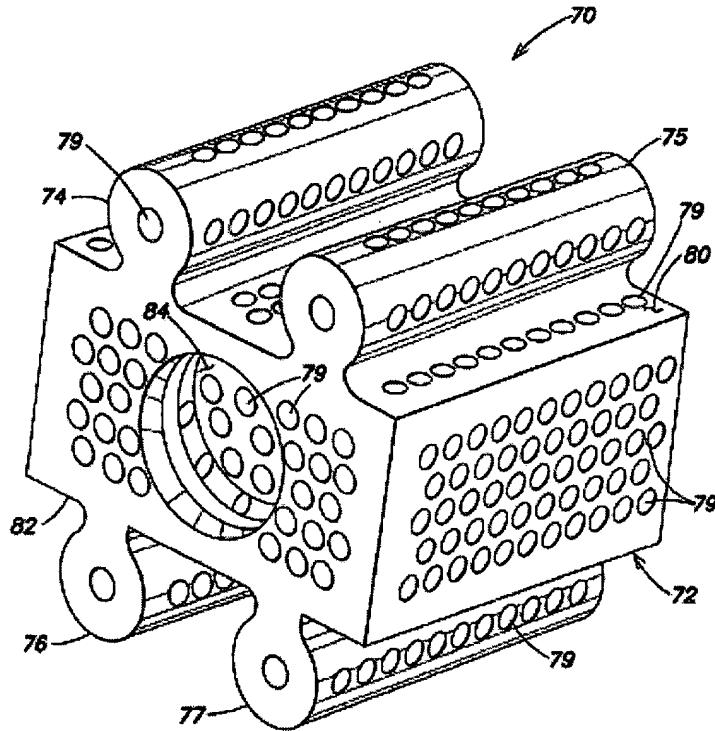


Remarks

Claims 1-2 and 6 are pending in the application. New claim 6 has been added. Claims 1-2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Hirayama et al. (U.S. Patent Number 4,946,378). Claims 1-2 also stand rejected under 35 U.S.C. 102(b) as being anticipated by Cottle (U.S. Patent Number 5,888,227). Claims 1-2 stand further rejected under 35 U.S.C. 102(e) as being anticipated by Fraser et al. (U.S. Patent Number 6,592,624).

A request for continued examination is filed herewith.

Claim 1 has been amended to require forming at least one keyway in each adjacent vertebra where the keyways are shaped to include a generally arcuate portion encompassing more than 180 degrees. Fig. 4, reproduced below, of the subject application shows an implant with protruding members for insertion in such keyways.



Protruding members 74-77 clearly include arcuate portions encompassing more than 180 degrees. Col. 2, lines 47-50 recite the step of forming corresponding keyways to accept the protruding members of the implant of fig. 4. Thus, no new matter has been added.

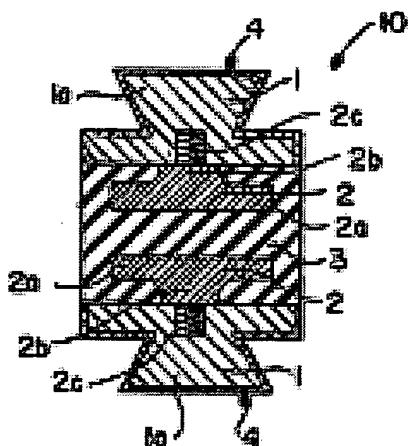
New claim 6 has also been added to further define embodiments of the invention. Claim 6 requires forming two keyways in each adjacent vertebra where the keyways correspond to protruding members on an implant where the members are placed symmetrically about an axis of symmetry on a surface and where each member protrudes above the height of the axis of symmetry on the surface. The implant of Fig. 4 of the present application clearly meets the limitations for the implant. Col. 2, lines 47-50 recites the step of forming

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corresponding keyways to accept the protruding members of the implant of fig.
4. Thus, no new matter has been added.

Claim Rejections --- 35 U.S.C. §102(b)

Claims 1-2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Hirayama et al. (U.S. Patent Number 4,946,378) (the “378 patent”).

Hirayama teaches a disk replacement implant for a spine. Hirayama’s implant is shown in fig. 1 of the ‘378 patent:



Hirayama’s protruding members **1**, as shown in fig. 1, are dovetail shaped. The keyways formed to receive these members are, likewise, dovetail shaped (see Hirayama ‘378 fig. 3).

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Claim 1, as amended, requires (in part)

...(b). forming at least one keyway in the first vertebra corresponding to each of the at least one protruding members on the first surface and at least one keyway in the second vertebra corresponding to each of the at least one protruding members on the second surface, **wherein each keyway has a profile including a generally arcuate portion that encompasses more than one hundred and eighty degrees;** ...(emphasis added).

Formation of Hirayama's keyways, which are dovetail shaped, does not meet the limitation shown above for claim 1 as amended. (See bolded portion of step "b".) Since Hirayama does not teach a method that meets the limitations of claim 1, Hirayama cannot anticipate claim 1. Claim 2 which depends from claim 1 and add further limitations, is patentable over Hirayama for at least the same reasons as for claim 1.

Claims 1-2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Cottle (U.S. Patent Number 5,888,227).

Applicant respectfully traverses the Examiner's assertion that Cottle '227 includes any teaching of forming keyways in vertebrae for insertion of a protruding member of an implant. (See office action, page 6, first paragraph.) Cottle '227 teaches a spinal implant device for insertion between two vertebrae. Cottle's device includes a 3D structure "preferably in the form of pointed teeth." (See Cottle '227, col. 3, lines 64 to col. 4 line 4.) The elements labeled "18" in figures 1-4, 6 and 7 of Cottle '227 are such teeth. These structures provide "positional stability" for the implant (see col. 2, lines 46 to 58.) Cottle '227, col.

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2, lines 64-67, which is relied upon in the office action to teach keyways, reads
as follows:

“In another embodiment, the cover and base faces are designed so as to bulge convex outward, so as to achieve optimal matching to the geometry of the end plates of the adjoining end plates of the vertebral bodies.”

Whatever else this passage from Cottle '227 may teach, disclose or suggest, this passage does not suggest forming any structure, a keyway or otherwise, corresponding to Cottle's protruding members 18.

Claim 1, as amended, requires (in part)

... (b). forming at least one keyway in the first vertebra corresponding to each of the at least one protruding members on the first surface and at least one keyway in the second vertebra corresponding to each of the at least one protruding members on the second surface, wherein each keyway has a profile including a generally arcuate portion that encompasses more than one hundred and eighty degrees; ...

Since Cottle does not teach forming keyways in the adjacent vertebrae that correspond to protruding members with an arcuate shape encompassing more than 180 degrees, Cottle '227 cannot anticipate claim 1. Claim 2, which depends from claim 1 and add further limitations, is patentable over Cottle '227 for at least the same reasons as for claim 1.

Claim Rejections --- 35 U.S.C. §102(e)

Claims 1-2 stand rejected under 35 U.S.C. 102(e) as being anticipated by Fraser et al. (U.S. Patent Number 6,592,624).

Fraser teaches a disk replacement implant for a spine. Fraser's implant is shown in fig. 1 of the '624 patent and labeled "**10**":

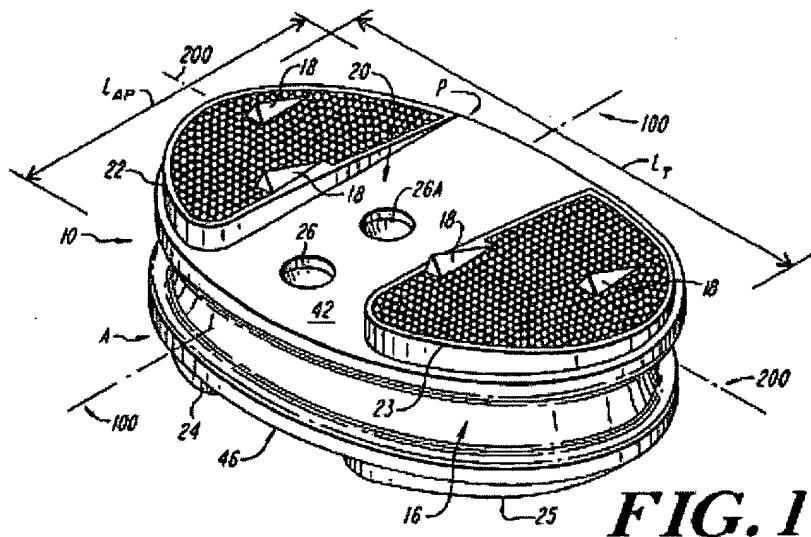


FIG. 1

Fraser's implant **10** includes protruding members **22**, **23**, as shown in fig. 1, which are shaped as hemispherical disks. Implantation of the implant 10 is described in Fraser '624 on col. 6, line 65 to col. 7, line 10. Fraser provides no teaching or suggestion of forming a keyway in the vertebrae of any sort to receive Fraser's implant.

Claim 1, as amended, requires (in part)

...(b). forming at least one keyway in the first vertebra corresponding to each of the at least one protruding members on the first surface and at least one keyway in the second vertebra corresponding to each of the at least one protruding members on the second surface, wherein each keyway has a profile including a generally arcuate portion that encompasses more than one hundred and eighty degrees...

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Since Fraser does not teach the step of forming a keyway in a vertebra, Fraser cannot anticipate claim 1. Claim 2, which depends from claim 1 and adds further limitations, is patentable over Fraser for at least the same reasons as for claim 1.

For the reasons set forth above, it is submitted that all pending claims are now in condition for allowance. Consideration of the newly added claim and reconsideration of all pending claims and a notice of allowance are therefore requested. If any additional fees are required for the timely consideration of this application, please charge deposit account number 19-4972. The Examiner is requested to telephone the undersigned if any matters remain outstanding so that they may be resolved expeditiously.

Respectfully submitted,



John L. Conway
Registration No. 48,241
Attorney for Applicant

Bromberg & Sunstein LLP
125 Summer Street
Boston, MA 02110-1618
(617) 443-9292

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